

## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 03/06468

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 B22D11/06

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B22D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 04369 A (VOEST ALPINE IND ANLAGEN ;ACCIAI SPECIALI TERNI SPA (IT); GUASTO G) 5 February 1998 (1998-02-05) cited in the application the whole document	1-20
A	EP 0 714 715 A (THYSSEN STAHL AG ;USINOR SACILOR (FR)) 5 June 1996 (1996-06-05) cited in the application the whole document	1-20
A	EP 0 620 061 A (USINOR SACILOR ;THYSSEN STAHL AG (DE)) 19 October 1994 (1994-10-19) cited in the application the whole document	1-20
	--- -/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

11 September 2003

Date of mailing of the international search report

19/09/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Bergman, L

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/06468

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 380 698 A (NISSHIN STEEL CO LTD) 8 August 1990 (1990-08-08) cited in the application the whole document ----	1-20
A	EP 0 285 963 A (NISSHIN STEEL CO LTD) 12 October 1988 (1988-10-12) cited in the application the whole document ----	1-20
A	EP 0 546 206 A (NIPPON STEEL CORP) 16 June 1993 (1993-06-16) abstract; claims 1,3; figures 1-3 ----	1-20
A	DE 100 56 916 A (SMS DEMAG AG) 23 May 2002 (2002-05-23) abstract; claim 1; figure 1 ----	1-20
A	US 5 154 222 A (BIRAT JEAN-PIERRE ET AL) 13 October 1992 (1992-10-13) the whole document ----	1-20
A	EP 0 390 924 A (NISSHIN STEEL CO LTD) 10 October 1990 (1990-10-10) the whole document -----	1-20

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/06468

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9804369	A	05-02-1998	IT RM960552 A1	02-02-1998
			AT 193471 T	15-06-2000
			AU 3863597 A	20-02-1998
			DE 69702211 D1	06-07-2000
			DE 69702211 T2	22-02-2001
			EP 0946317 A1	06-10-1999
			WO 9804369 A1	05-02-1998
			JP 3042896 B2	22-05-2000
			JP 2000500704 T	25-01-2000
			KR 2000029741 A	25-05-2000
			US 6378598 B1	30-04-2002
			ZA 9706786 A	11-02-1998
EP 0714715	A	05-06-1996	FR 2727337 A1	31-05-1996
			AT 194526 T	15-07-2000
			AU 675756 B2	13-02-1997
			AU 3773895 A	20-06-1996
			BR 9505565 A	04-11-1997
			CA 2164046 A1	31-05-1996
			CN 1130111 A ,B	04-09-1996
			CZ 9503158 A3	12-06-1996
			DE 69517924 D1	17-08-2000
			DE 69517924 T2	22-02-2001
			DK 714715 T3	06-11-2000
			EP 0714715 A1	05-06-1996
			ES 2149938 T3	16-11-2000
			FI 955766 A	31-05-1996
			GR 3034475 T3	29-12-2000
			JP 3367809 B2	20-01-2003
			JP 8206792 A	13-08-1996
			PL 311265 A1	10-06-1996
			PT 714715 T	29-12-2000
			RO 115337 B	28-01-2000
			RU 2145268 C1	10-02-2000
			SK 145995 A3	04-02-1998
			TR 960936 A2	21-11-1996
			US 5628359 A	13-05-1997
			ZA 9509737 A	29-05-1996
EP 0620061	A	19-10-1994	FR 2703935 A1	21-10-1994
			AT 132780 T	15-01-1996
			AU 667158 B2	07-03-1996
			AU 5926894 A	20-10-1994
			BR 9401478 A	18-10-1994
			CA 2121116 A1	15-10-1994
			CN 1093308 A ,B	12-10-1994
			CZ 9400838 A3	19-10-1994
			DE 69400051 D1	22-02-1996
			DE 69400051 T2	29-08-1996
			DK 620061 T3	06-05-1996
			EP 0620061 A1	19-10-1994
			ES 2084530 T3	01-05-1996
			FI 941711 A	15-10-1994
			GR 3019532 T3	31-07-1996
			JP 7051808 A	28-02-1995
			KR 203564 B1	15-06-1999
			PL 178562 B1	31-05-2000
			RU 2125500 C1	27-01-1999

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/06468

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0620061	A	SK 41194 A3 TR 28406 A US 5437325 A ZA 9402531 A	09-11-1994 07-06-1996 01-08-1995 13-10-1995
EP 0380698	A 08-08-1990	JP 2037945 A JP 2061357 C JP 7087970 B DE 68905460 D1 DE 68905460 T2 EP 0380698 A1 WO 9000948 A1 US 5207265 A	07-02-1990 10-06-1996 27-09-1995 22-04-1993 14-10-1993 08-08-1990 08-02-1990 04-05-1993
EP 0285963	A 12-10-1988	JP 1987733 C JP 7012526 B JP 63252646 A DE 3869170 D1 EP 0285963 A2 KR 9605882 B1 NO 881500 A ,B, US 4811780 A	08-11-1995 15-02-1995 19-10-1988 23-04-1992 12-10-1988 03-05-1996 10-10-1988 14-03-1989
EP 0546206	A 16-06-1993	JP 2013500 C JP 4046656 A JP 7041376 B EP 0546206 A1 US 5201362 A	02-02-1996 17-02-1992 10-05-1995 16-06-1993 13-04-1993
DE 10056916	A 23-05-2002	DE 10056916 A1 AU 2068602 A WO 0240200 A1 EP 1337364 A1	23-05-2002 27-05-2002 23-05-2002 27-08-2003
US 5154222	A 13-10-1992	FR 2656244 A1 AU 634841 B2 AU 6827590 A BR 9006506 A CA 2032065 A1 CN 1054551 A CN 1054731 A ,B CS 9006148 A3 EP 0435729 A1 FI 906309 A HU 56016 A2 IE 904472 A1 JP 4270034 A NO 905550 A PL 288416 A1 PT 96232 A SU 1834744 A3 ZA 9010330 A	28-06-1991 04-03-1993 04-07-1991 01-10-1991 27-06-1991 18-09-1991 25-09-1991 19-02-1992 03-07-1991 27-06-1991 29-07-1991 03-07-1991 25-09-1992 27-06-1991 23-09-1991 30-09-1991 15-08-1993 29-07-1992
EP 0390924	A 10-10-1990	JP 2034253 A JP 2097978 C JP 8002479 B DE 68924589 D1 DE 68924589 T2	05-02-1990 02-10-1996 17-01-1996 23-11-1995 05-06-1996

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/06468

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0390924	A	EP 0390924 A1	10-10-1990
		WO 9000947 A1	08-02-1990
		US 5058657 A	22-10-1991
<hr/>			
<p><b>BEST AVAILABLE COPY</b></p>			